

Name _____
Natural Logarithms

Oral Exercises

Give each equation in exponential form.

1. $\ln 4 = 1.39$

2. $\ln \frac{1}{4} = -1.39$

3. $\ln e = 1$

Give each equation in logarithmic form.

4. $e^2 = 7.39$

5. $e^{-2} = 0.14$

6. $e^{1/5} = 1.22$

Simplify.

7. $\ln \frac{1}{e}$

8. $\ln e^{12}$

9. $\ln \sqrt{e}$

Written Exercises

Write each equation in exponential form.

A 1. $\ln 8 = 2.08$

2. $\ln 100 = 4.61$

3. $\ln \frac{1}{3} = -1.10$

4. $\ln \frac{1}{e^2} = -2$

Write each equation in logarithmic form.

5. $e^3 = 20.1$

6. $e^7 = 1097$

7. $e^{1/2} = 1.65$

8. $\sqrt[3]{e} = 1.40$

Simplify. If the expression is undefined, say so.

9. $\ln e^2$

10. $\ln e^{10}$

11. $\ln \frac{1}{e^3}$

12. $\ln \frac{1}{\sqrt{e}}$

13. $\ln 1$

14. $\ln 0$

15. $e^{\ln 5}$

16. $e^{\ln 0.5}$

Write as a single logarithm.

17. $\ln 3 + \ln 4$

18. $\ln 8 - \ln 2$

19. $2 \ln 3 - \ln 5$

9. $\ln 7 + \frac{1}{2} \ln 9$

21. $\frac{1}{3} \ln 8 + \ln 5 + 3$

22. $4 \ln 2 - \ln 3 - 1$